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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,756	11/30/2000	Hideyo Makino	199892US2	1614

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OBLON SPIVAK MCCLELLAND MAIER & NEUSTADT PC
FOURTH FLOOR
1755 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202

EXAMINER

PHAM, HAI CHI

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 02/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,756

Applicant(s)

MAKINO, HIDEYO

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 & 5. 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Duplicate Claim Warning

2. Applicant is advised that the following sets of claims {11-20} and {31-40} are substantial duplicates of the respective sets of claims {1-10} and {21-30}. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to reject the other as being a substantial duplicate of the allowed claim. MPEP § 706.03(k). Therefore, should the indicated claims be found allowable, the duplicate claim(s) will be rejected under 35 USC § 101.

Claim Objections

3. Claim 31 is objected to because of the following informalities:
 - Line 7, "angle θ " should read --where angle θ is--.Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 1:
- The following limitation "*an image* recording substrate" at line 8 appears to be ambiguous in that it is not known whether it is different from a previously recited limitation, namely "a recording substrate" at line 5. The above limitation "*an image* recording substrate" should read --*the* recording substrate-- to indicate that it is referred back to the previous claimed element.
- Claims 5, 11, 15, 21, 25, 31, and 35:
- Similarly, the following same limitation found in each of the independent claims 5, 11, 15, 21, 25, 31, and 35 "*an image* recording substrate" should read --*the* recording substrate-- to indicate that it is referred back to the previous claimed element.
- Claim 2:
- The limitation set forth in claim 2 leads to a confusion in that, since the rotation of the semiconductor laser array [assembly] is claimed to be performed around a point, which is a midpoint of a straight line drawn by connecting the centers of the first and n-th laser beam spots, such midpoint is located on the surface of the recording substrate, which is far out from the semiconductor laser array

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assembly. The claimed language should be refined to clearly define the point of rotation of the semiconductor laser array.

- The limitation "a straight line" at line 3 should read --said second straight line— since the above straight line connecting the centers of the first and n-th laser beam spots has been defined in the corresponding parent claim as the second line.
- Claims 6, 9, 12, 16, 19, 22, 26, 29, 32, 36, and 39:
- Similarly to claim 2, each of the claims 6, 9, 12, 16, 19, 22, 26, 29, 32, 36, and 39 should have its respective claimed language be refined to clearly define the claimed invention.

Claims 3, 4, 7, 8, 10, 13, 14, 17, 18, 20, 23, 24, 27, 28, 30, 33, 34, 37, and 38 are dependent from claims 1, 5, 11, 15, 21, 25, 31, and 35 above, and are therefore indefinite.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi (U.S. 6,133,566.)

Yamaguchi discloses a multiple beam scanning apparatus comprising a plurality of semiconductor laser arrays as light sources (2₁-2₃, Figs. 4 and 5,) each including a plurality of light emitting points in a single package, said plurality of light emitting points being formed to be positioned in linear relationship to one another and having an equidistant pitch so as to respectively emit laser beams simultaneously scanned over a recording substrate (photosensitive drum 8,) and an adjusting means for adjusting a position of said plural semiconductor laser arrays so as to form a tilted angle θ_R , which is based on both the number of light emitting points or scanning lines (m) and the dot density (Ps) in the sub-scanning direction (col. 8, line 66 to col. 9, line 67.)

Although Yamaguchi does not explicitly disclose the claimed relation

$$\theta \leq \tan^{-1} \{1/(n-1)\}$$

Yamaguchi does however indicate that such angle θ_R has a value well within the claimed range (col. 9, line 41.) Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Yamaguchi to explicitly set the range of the inclination angle as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Yamaguchi further teaches the adjusting means rotating each of the semiconductor laser arrays around a midpoint of a line connecting the centers of the light emitting points (Fig. 6,) the interval of recorded dot density in the secondary scanning direction being 50 μm at most (42.3 μm at 600 dpi to be exact) (col. 9, line 41,)

and the first semiconductor laser array having an optical axis of laser beams aligned to be parallel to and tilted by a relative minute angle from that of other laser arrays so that a position of said laser beam spots on the recording substrate formed by the first laser array is adjusted to be displaced from that of beam spots from the other laser arrays by a predetermined distance along the primary scanning direction (Figs. 2b, 3a, 3b.)

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kerr et al. (U.S. 6,232,999 B1) discloses a multichannel printhead having a semiconductor laser array as a light source and a position adjustor for adjusting the position of the laser array so as to obtain a predetermined pixel-to-pixel distance of the laser beam spots as a latent image is recorded on the surface of the drum. Asada (U.S. 6,222,611 B1) discloses a multi-beam image forming apparatus in which the position of the laser array is adjusted with regard to the sub-scanning direction so as to obtain a predetermined dot density in the sub-scanning direction.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (703) 308-3126. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

February 23, 2002